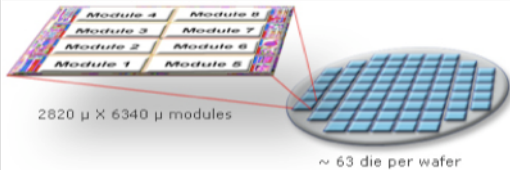


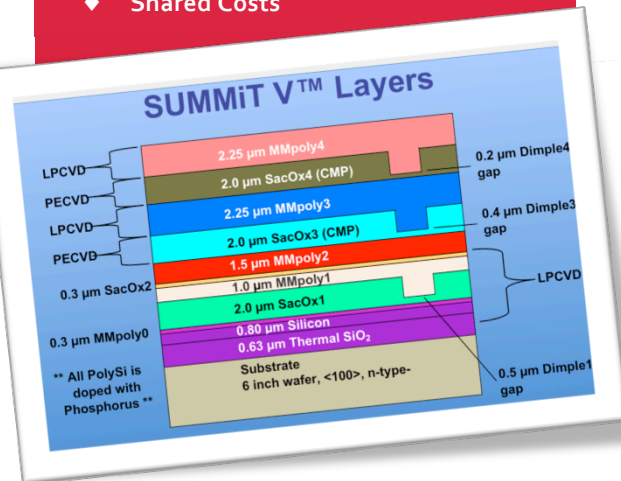
Access to Sandia's SUMMIT™ V Process

MEMS prototyping on Multi
Project Wafers utilizing our
5-Layer SUMMIT V™
Polysilicon Process

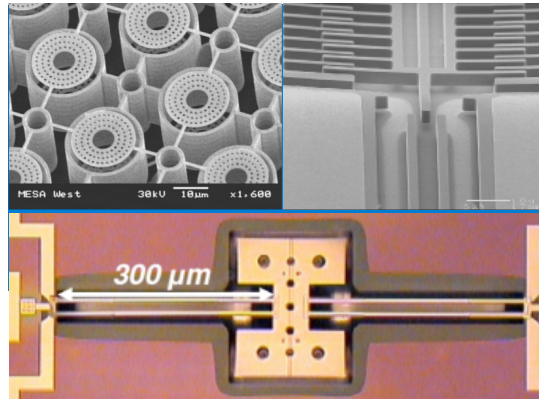


Available through SANDIA's
SAMPLES Program; customers have
access to MEMS prototyping, design
tools & services, education

- ◆ 5 layers of low-stress polysilicon
- ◆ Standard Processes
- ◆ CMP planarization
- ◆ Batch Fabrication
- ◆ Module area – 2,820 μm x 6,340 μm
- ◆ AlCu Metallization Layer - 0.70 μm
- ◆ 100 unreleased parts
- ◆ Release available on request
- ◆ Shared Costs



mems.sandia.gov/samples



Novel Fabrication Technologies
SUMMIT V™ Technology
Reliability Science
Design and Analysis
SAMPLES Program
University Alliance
Multi-Project Wafers



Information about these and
other capabilities can be found at

memsinfo@sandia.gov
mems.sandia.gov

Microsystems

Science, Technology and Components
www.sandia.gov/mstc

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Sandia National Laboratories

MEMS Technologies

...Conducting research and
development activities for
advanced microelectromechanical
systems that push the technology
envelope for national security
applications.

...Developing and maintaining a
core set of MEMS fabrication
processes and technologies.

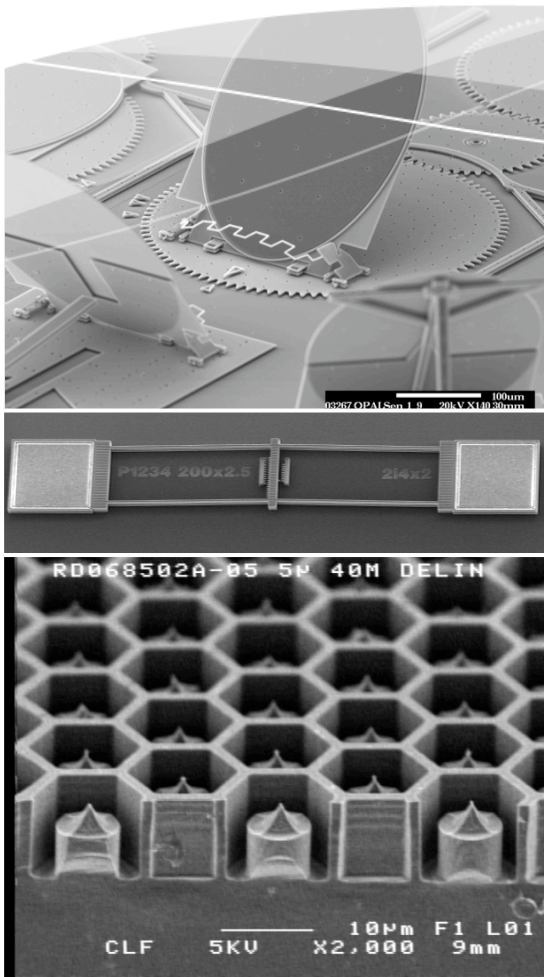
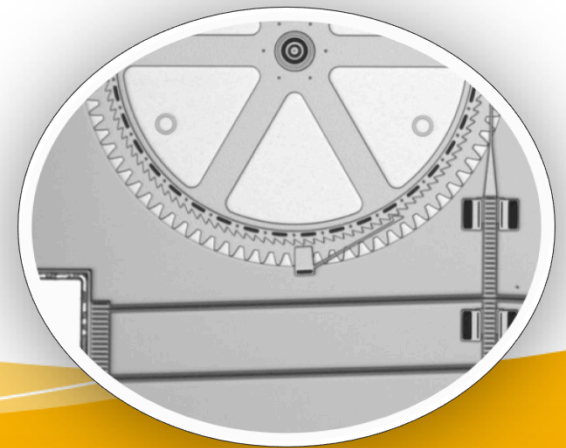


"...exceptional service in the national interest."



MEMS at Sandia National Laboratories

Our programs in advanced MEMS include actuators, pressure sensors, inertial sensors, fluidic components, electrical switches, RF switches and filters, mirrors, planar light wave circuits (PLC), solar cells, and radiation detectors. We specialize in high-performance and high-security applications, where low cost is not the principle motivation for using MEMS. We use advanced techniques to achieve unique devices, such as optical transduction of displacement. Novel designs and applications are closely coupled to our processing technologies, pushing the design-processing envelope to enable special capabilities for national security needs.



Process Technologies

Our MEMS fabrication processing technologies include our baseline polysilicon surface micromachining process, SUMMiT V (Sandia Ultra-planar Multi-level MEMS Technology with five levels of polysilicon), and variations on SUMMiT V that incorporate, for example, silicon nitride layers, thick poly₄, AlCu metallization layer, deep reactive ion etching (DRIE), silicon-on-insulator (SOI) wafers, and/or doping to create field effect transistors (SFET). Additional MEMS fabrication technologies include post-CMOS compatible processes for molded tungsten and aluminum nitride.

Working with Sandia

Industry, small business, universities, and government agencies can gain access to these advanced MEMS technologies and services by developing new partnerships with Sandia via a variety of agreement mechanisms. Sandia provides technical resources and facilities to a variety of other federal agencies through our DOE sponsored "Work for Others" program.

For more information about partnering with Sandia, see sandia.gov/bus-ops/partnerships/ways/index.html

Services

Sandia's core MEMS services include design and layout, analysis, device characterization and test, technology development and reliability science coupled with failure analysis.

Our fabrication processes and other core technologies are available outside of Sandia to support national security interests, such as prototype development and/or limited production of high-value devices.

We have strong ties to universities through a comprehensive University Alliance Program and with industry through our SAMPLES program, which offers access to SUMMiT V.